Jesus Maria Sanz-Serna

List of Publications by Year
in descending order

120 papers	4,710 citations	87888 38 h-index	110387 64 g-index
122 all docs	122 docs citations	122 times ranked	1683 citing authors

#	Article	IF	Citations
1	Runge-kutta schemes for Hamiltonian systems. BIT Numerical Mathematics, 1988, 28, 877-883.	2.0	361
2	Symplectic integrators for Hamiltonian problems: an overview. Acta Numerica, 1992, 1, 243-286.	10.7	290
3	Long-Time-Step Methods for Oscillatory Differential Equations. SIAM Journal of Scientific Computing, 1998, 20, 930-963.	2.8	194
4	On polynomials orthogonal with respect to certain Sobolev inner products. Journal of Approximation Theory, 1991, 65, 151-175.	0.8	148
5	Optimal tuning of the hybrid Monte Carlo algorithm. Bernoulli, 2013, 19, .	1.3	147
6	A Numerical Method for a Partial Integro-Differential Equation. SIAM Journal on Numerical Analysis, 1988, 25, 319-327.	2.3	141
7	The Development of Variable-Step Symplectic Integrators, with Application to the Two-Body Problem. SIAM Journal of Scientific Computing, 1993, 14, 936-952.	2.8	127
8	Conerservative and Nonconservative Schemes for the Solution of the Nonlinear SchrÃ¶dinger Equation. IMA Journal of Numerical Analysis, 1986, 6, 25-42.	2.9	120
9	Product Approximation for Non-linear Problems in the Finite Element Method. IMA Journal of Numerical Analysis, 1981, 1, 253-266.	2.9	118
10	Order Conditions for Canonical Rungeâ€“Kutta Schemes. SIAM Journal on Numerical Analysis, 1991, 28, 1081-1096.	2.3	113
11	Methods for the numerical solution of the nonlinear Schroedinger equation. Mathematics of Computation, 1984, 43, 21-27.	2.1	111
12	Petrov-Galerkin methods for nonlinear dispersive waves. Journal of Computational Physics, 1981, 39, 94-102.	3.8	96
13	Convergence of method of lines approximations to partial differential equations. Computing (Vienna/New York), 1984, 33, 297-313.	4.8	87
14	Hybrid Monte Carlo on Hilbert spaces. Stochastic Processes and Their Applications, 2011, 121, 2201-2230.	0.9	72
15	The numerical integration of relative equilibrium solutions. The nonlinear Schrodinger equation. IMA Journal of Numerical Analysis, 2000, 20, 235-261.	2.9	68
16	On simple moving grid methods for one-dimensional evolutionary partial differential equations. Journal of Computational Physics, 1988, 74, 191-213.	3.8	65
17	An explicit finite-difference scheme with exact conservation properties. Journal of Computational Physics, 1982, 47, 199-210.	3.8	64
18	Stability and Convergence in Numerical Analysis III: Linear Investigation of Nonlinear Stability. IMA Journal of Numerical Analysis, 1988, 8, 71-84.	2.9	64

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19	An easily implementable fourth-order method for the time integration of wave problems. Journal of Computational Physics, 1992, 103, 160-168.	3.8	64
20	Soliton and antisoliton interactions in the â€˜â€˜goodâ€™â€™ Boussinesq equation. Journal of Mathematical Physics, 1988, 29, 1964-1968.	1.1	63
21	Partitioned Runge-Kutta methods for separable Hamiltonian problems. Mathematics of Computation, 1993, 60, 617-634.	2.1	63
22	A simple adaptive technique for nonlinear wave problems. Journal of Computational Physics, 1986, 67, 348-360.	3.8	61
23	A method for the integration in time of certain partial differential equations. Journal of Computational Physics, 1983, 52, 273-289.	3.8	55
24	Accuracy and conservation properties in numerical integration: the case of the Korteweg-de Vries equation. Numerische Mathematik, 1997, 75, 421-445.	1.9	55
25	Symplectic Runge–Kutta Schemes for Adjoint Equations, Automatic Differentiation, Optimal Control, and More. SIAM Review, 2016, 58, 3-33.	9.5	55
26	High-Order Symplectic Rungeâ€“Kuttaâ€“NystrÃ¶m Methods. SIAM Journal of Scientific Computing, 1993, 14, 1237-1252.	2.8	54
27	Randomized Hamiltonian Monte Carlo. Annals of Applied Probability, 2017, 27, .	1.3	54
28	Classical numerical integrators for waveâ€packet dynamics. Journal of Chemical Physics, 1996, 104, 2349-2355.	3.0	51
29	Nonlinear stability and convergence of finite-difference methods for the ?good? Boussinesq equation. Numerische Mathematik, 1990, 58, 215-229.	1.9	49
30	Geometric integrators and the Hamiltonian Monte Carlo method. Acta Numerica, 2018, 27, 113-206.	10.7	49
31	Error Growth in the Numerical Integration of Periodic Orbits, with Application to Hamiltonian and Reversible Systems. SIAM Journal on Numerical Analysis, 1997, 34, 1391-1417.	2.3	47
32	Modulated Fourier expansions and heterogeneous multiscale methods. IMA Journal of Numerical Analysis, 2009, 29, 595-605.	2.9	44
33	Numerical Integrators for the Hybrid Monte Carlo Method. SIAM Journal of Scientific Computing, 2014, 36, A1556-A1580.	2.8	44
34	Pseudospectral Method for the "Good" Boussinesq Equation. Mathematics of Computation, 1991, 57, 109.	2.1	41
35	Explicit Symplectic Integrators Using Hessian–Vector Products. SIAM Journal of Scientific Computing, 1997, 18, 223-238.	2.8	40
36	Higher-Order Averaging, Formal Series and Numerical Integration I: B-series. Foundations of Computational Mathematics, 2010, 10, 695-727.	2.5	40

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37	Symplectic Runge-Kutta and related methods: recent results. Physica D: Nonlinear Phenomena, 1992, 60, 293-302.	2.8	39
38	Stability and convergence at the PDE/stiff ode interface. Applied Numerical Mathematics, 1989, 5, 117-132.	2.1	38
39	Symplectic Methods Based on Decompositions. SIAM Journal on Numerical Analysis, 1997, 34, 1926-1947.	2.3	38
40	An adaptive moving grid method for one-dimensional systems of partial differential equations. Journal of Computational Physics, 1989, 82, 454-486.	3.8	37
41	An unconventional symplectic integrator of W. Kahan. Applied Numerical Mathematics, 1994, 16, 245-250.	2.1	37
42	A Finite Difference Scheme for the K(2, 2) Compacton Equation. Journal of Computational Physics, 1995, 120, 248-252.	3.8	37
43	Mollified Impulse Methods for Highly Oscillatory Differential Equations. SIAM Journal on Numerical Analysis, 2008, 46, 1040-1059.	2.3	36
44	Convergence of Methods for the Numerical Solution of the Kortewegâ€"de Vries Equation. IMA Journal of Numerical Analysis, 1981, 1, 215-221.	2.9	34
45	Split-step spectral schemes for nonlinear dirac systems. Journal of Computational Physics, 1989, 83, 407-423.	3.8	34
46	Equilibria of Runge-Kutta methods. Numerische Mathematik, 1990, 58, 243-254.	1.9	34
47	Ergodicity of Dissipative Differential Equations Subject to Random Impulses. Journal of Differential Equations, 1999, 155, 262-284.	2.2	34
48	Numerical stroboscopic averaging for ODEs and DAEs. Applied Numerical Mathematics, 2011, 61, 1077-1095.	2.1	31
49	Conservation of integrals and symplectic structure in the integration of differential equations by multistep methods. Numerische Mathematik, 1992, 61, 281-290.	1.9	30
50	Canonical B-series. Numerische Mathematik, 1994, 67, 161-175.	1.9	29
51	The Behavior of Finite Element Solutions of Semilinear Parabolic Problems Near Stationary Points. SIAM Journal on Numerical Analysis, 1994, 31, 1000-1018.	2.3	29
52	Order conditions for canonical Runge-Kutta-NystrÃ¶m methods. BIT Numerical Mathematics, 1992, 32, 131-142.	2.0	28
53	Error growth in the numerical integration of periodic orbits by multistep methods, with application to reversible systems. IMA Journal of Numerical Analysis, 1998, 18, 57-75.	2.9	28
54	A general equivalence theorem in the theory of discretization methods. Mathematics of Computation, 1985, 45, 143-152.	2.1	28

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55	Compressible generalized hybrid Monte Carlo. Journal of Chemical Physics, 2014, 140, 174108.	3.0	27
56	The number of conditions for a Runge-Kutta method to have effective order p. Applied Numerical Mathematics, 1996, 22, 103-111.	2.1	26
57	Variable step implementation of geometric integrators. Applied Numerical Mathematics, 1998, 28, 1-16.	2.1	26
58	Heterogeneous Multiscale Methods for Mechanical Systems with Vibrations. SIAM Journal of Scientific Computing, 2010, 32, 2029-2046.	2.8	25
59	Shadows, chaos, and saddles. Applied Numerical Mathematics, 1993, 13, 181-190.	2.1	24
60	An extension of the Lax-Richtmyer theory. Numerische Mathematik, 1984, 44, 279-283.	1.9	23
61	Higher-Order Averaging, Formal Series and Numerical Integration II: The Quasi-Periodic Case. Foundations of Computational Mathematics, 2012, 12, 471-508.	2.5	23
62	Extra Chance Generalized Hybrid Monte Carlo. Journal of Computational Physics, 2015, 281, 365-374.	3.8	23
63	A galerkin method for a nonlinear integro-differential wave system. Computer Methods in Applied Mechanics and Engineering, 1984, 44, 229-237.	6.6	22
64	Higher-Order Averaging, Formal Series and Numerical Integration III: Error Bounds. Foundations of Computational Mathematics, 2015, 15, 591-612.	2.5	22
65	Remarks on methods for the computation of boundary-element integrals by co-ordinate transformation. Communications in Applied Numerical Methods, 1990, 6, 121-123.	0.5	21
66	A note on uniform in time error estimates for approximations to reaction-diffusion equations. IMA Journal of Numerical Analysis, 1992, 12, 457-462.	2.9	20
67	A Hamiltonian, explicit algorithm with spectral accuracy for the â€˜goodâ€™ Boussinesq system. Computer Methods in Applied Mechanics and Engineering, 1990, 80, 417-423.	6.6	19
68	The numerical study of blowup with application to a nonlinear Schrodinger equation. Journal of Computational Physics, 1992, 102, 407-416.	3.8	19
69	Adaptive multi-stage integrators for optimal energy conservation in molecular simulations. Journal of Computational Physics, 2016, 327, 434-449.	3.8	19
70	Barrelledness conditions onC 0 (E). Archiv Der Mathematik, 1978, 31, 589-596.	0.5	18
71	Studies in Numerical Nonlinear Instability III: Augmented Hamiltonian Systems. SIAM Journal on Applied Mathematics, 1987, 47, 92-108.	1.8	18
72	Numerical solution of a hyperbolic system of conservation laws with source term arising in a fluidized bed model. Journal of Computational Physics, 1991, 93, 297-311.	3.8	18

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73	The numerical integration of relative equilibrium solutions. Geometric theory. Nonlinearity, 1998, 11, 1547-1567.	1.4	17
74	A formal series approach to averaging: Exponentially small error estimates. Discrete and Continuous Dynamical Systems, 2012, 32, 3009-3027.	0.9	17
75	Interpolation of the Coefficients in Nonlinear Elliptic Galerkin Procedures. SIAM Journal on Numerical Analysis, 1984, 21, 77-83.	2.3	16
76	Equivalence Theorems for Incomplete Spaces: An Appraisal. IMA Journal of Numerical Analysis, 1984, 4, 109-115.	2.9	16
77	Studies in numerical nonlinear instability. II. A new look at ut + uux = 0. Journal of Computational Physics, 1986, 66, 225-238.	3.8	16
78	Adaptive Splitting Integrators for Enhancing Sampling Efficiency of Modified Hamiltonian Monte Carlo Methods in Molecular Simulation. Langmuir, 2017, 33, 11530-11542.	3.5	16
79	Markov Chain Monte Carlo and Numerical Differential Equations. Lecture Notes in Mathematics, 2014, , 39-88.	0.2	16
80	Regions of stability, equivalence theorems and the Courant-Friedrichs-Lewy condition. Numerische Mathematik, 1986, 49, 319-329.	1.9	15
81	A shadowing result with applications to finite element approximation of reaction-diffusion equations. Mathematics of Computation, 1999, 68, 55-73.	2.1	15
82	Word Series for Dynamical Systems and Their Numerical Integrators. Foundations of Computational Mathematics, 2017, 17, 675-712.	2.5	15
83	A Finite Difference Formula for the Discretization of d 3 /dx 3 on Nonuniform Grids. Mathematics of Computation, 1991, 57, 239.	2.1	14
84	Vibrational resonance: a study with high-order word-series averaging. Applied Mathematics and Nonlinear Sciences, 2016, 1, 239-246.	1.6	14
85	A study of the recursion Yn + 1 = Yn + TYmn. Journal of Mathematical Analysis and Applications, 1986, 116, 456-464.	1.0	12
86	Convergence analysis of one-step schemes in the method of lines. Applied Mathematics and Computation, 1989, 31, 183-196.	2.2	11
87	Are Gauss-Legendre methods useful in molecular dynamics?. Journal of Computational and Applied Mathematics, 1996, 67, 173-179.	2.0	11
88	Instabilities and Inaccuracies in the Integration of Highly Oscillatory Problems. SIAM Journal of Scientific Computing, 2009, 31, 1653-1677.	2.8	11
89	A Technique for Studying Strong and Weak Local Errors of Splitting Stochastic Integrators. SIAM Journal on Numerical Analysis, 2016, 54, 3239-3257.	2.3	11
90	Palindromic 3-stage splitting integrators, a roadmap. Journal of Computational Physics, 2017, 346, 340-355.	3.8	11

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91	Multi-stage splitting integrators for sampling with modified Hamiltonian Monte Carlo methods. Journal of Computational Physics, 2018, 373, 900-916.	3.8	11
92	The non-existence of symplectic multi-derivative Runge-Kutta methods. BIT Numerical Mathematics, 1994, 34, 80-87.	2.0	10
93	Computing normal forms and formal invariants of dynamical systems by means of word series. Nonlinear Analysis: Theory, Methods & Applications, 2016, 138, 326-345.	1.1	10
94	A Stroboscopic Numerical Method for Highly Oscillatory Problems. Lecture Notes in Computational Science and Engineering, 2012, , 71-85.	0.3	10
95	A Multiscale Technique for Finding Slow Manifolds of Stiff Mechanical Systems. Multiscale Modeling and Simulation, 2012, 10, 1180-1203.	1.6	9
96	The Connections Between Lyapunov Functions for Some Optimization Algorithms and Differential Equations. SIAM Journal on Numerical Analysis, 2021, 59, 1542-1565.	2.3	9
97	Lack of dissipativity is not symplecticness. BIT Numerical Mathematics, 1995, 35, 269-276.	2.0	8
98	STABILIZING WITH A HAMMER. Stochastics and Dynamics, 2008, 08, 47-57.	1.2	8
99	Convergence of the Lambert-McLeod trajectory solver and of the celf method. Numerische Mathematik, 1984, 45, 173-182.	1.9	7
100	The spectral accuracy of a fully-discrete scheme for a nonlinear third order equation. Computing (Vienna/New York), 1990, 44, 187-196.	4.8	6
101	The Acceptance Probability of the Hybrid Monte Carlo Method in High-Dimensional Problems. AIP Conference Proceedings, 2010, , .	0.4	6
102	Bogdanovâ€“Takens resonance in time-delayed systems. Nonlinear Dynamics, 2018, 91, 1939-1947.	5.2	6
103	HMC: Reducing the number of rejections by not using leapfrog and some results on the acceptance rate. Journal of Computational Physics, 2021, 437, 110333.	3.8	6
104	Some aspects of the boundary locus method. BIT Numerical Mathematics, 1980, 20, 97-101.	2.0	5
105	On finite elements simulatenously in space and time. International Journal for Numerical Methods in Engineering, 1983, 19, 623-624.	2.8	5
106	Geometrically Derived Difference Formulae for the Numerical Integration of Trajectory Problems. IMA Journal of Numerical Analysis, 1982, 2, 357-370.	2.9	4
107	A New Class of Results for the Algebraic Equations of Implicit Runge-Kutta Processes. IMA Journal of Numerical Analysis, 1991, 11, 449-455.	2.9	4
108	Linearly Implicit Variable Coefficient Methods of Lambertâ€”Sigurdsson Type. IMA Journal of Numerical Analysis, 1981, 1, 39-45.	2.9	3

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109	Approximation of radial functions by piecewise polynomials on arbitrary grids. Numerical Methods for Partial Differential Equations, 1991, 7, 1-8.	3.6	3
110	Word combinatorics for stochastic differential equations: Splitting integrators. Communications on Pure and Applied Analysis, 2019, 18, 2163-2195.	0.8	3
111	On the use of the product approximation technique in nonlinear galerkin methods. International Journal for Numerical Methods in Engineering, 1984, 20, 778-779.	2.8	2
112	A stabilized Galerkin method for a third-order evolutionary problem. Mathematics of Computation, 1990, 55, 497-497.	2.1	2
113	Contractivity of Runge–Kutta Methods for Convex Gradient Systems. SIAM Journal on Numerical Analysis, 2020, 58, 2079-2092.	2.3	2
114	Carrying an inverted pendulum on a bumpy road. Discrete and Continuous Dynamical Systems - Series B, 2010, 14, 429-438.	0.9	2
115	A simplified variable metric hybrid Monte Carlo method. , 2013, , .		1
116	A stroboscopic averaging algorithm for highly oscillatory delay problems. IMA Journal of Numerical Analysis, 2019, 39, 1110-1133.	2.9	1
117	High-order stroboscopic averaging methods for highly oscillatory delay problems. Applied Numerical Mathematics, 2020, 152, 466-479.	2.1	1
118	FINITE ELEMENTS FOR NONLINEAR INTEGROâ€“DIFFERENTIAL EQUATIONS AND THEIR INTEGRATION IN TIME. , 1985, , 415-420.		1
119	A new approach to high-order averaging. , 2012, , .		0
120	Beating the Verlet integrator in Monte Carlo simulations. , 2013, , .		0